

Old 999 Still in Service

By Ralph Howard

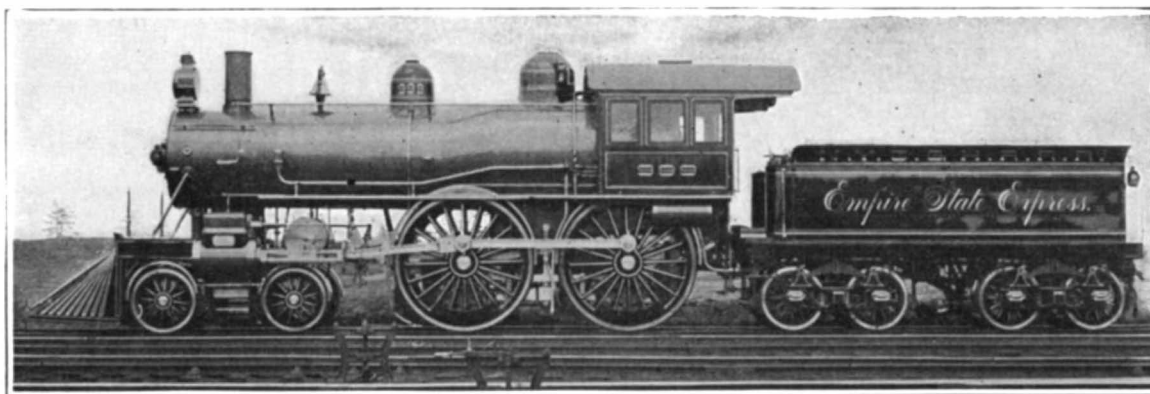
CONSIDERABLE circulation was given, recently, to a statement that No. 999, the famous engine that hauled the Empire State Express for so many years had been sent to the Port of Missing Engines, otherwise known as the scrap heap. This is not in accordance with the facts, for the famous locomotive is still in service on the railroad that it helped to make famous. In this connection the New York Central has supplied us with material on the history of the old engine, which many readers will find of great interest.

No. 999 was built entirely at the construction shops of the railroad in West Albany. She was completed in 1892, and went into regular service in front of the Empire State Express early the next year. Built for light, fast running, she was ideal for this light, fast train. She was equipped with special 81-inch drivers and 40-inch truck wheels, and was the first engine to have brakes applied to her front trucks. It was with her doing the hauling that the train made its much disputed record of 112.5 miles per hour. The scheduled time for the 439 miles run between New York and Buffalo was eight hours, with four stops. Deducting all stops, etc., the schedule called for a net speed throughout the run of just about sixty miles per hour. Owing to heavy traffic and other conditions, these exacting demands on the Empire have been modified, and her schedule now allows her nine hours to make the run.

It is to be emphasized that, while engines today are built much heavier than the 999, their drivers are not so large. This puts them at a double disadvantage when it comes to a question of pure speed; for not only must a greater piston speed be developed to cover the ground at the same rate, but the pounding on the track is vastly greater. The engines of today will make their maximum speed with a far longer and heavier train than their predecessors of twenty years ago—the 999 would not begin to make 60 miles per hour with nine or ten cars; they would make just about as good speed as the old fellows did, in fact, if the track were such as to permit it; but if we attempted to run the Empire State Express of today at any such speed as 100 or 110 miles per hour, the first curve would probably see her ditched by spreading rails. Her limit is about 80 or 85 miles on the straightaways.

After about twenty years of service of the sort for which it was built, it became necessary to retire the 999 from the main line, in recognition of the length and weight of the through trains of the new period. The famous engine was therefore shifted to the Rome, Watertown and Ogdensburg, then maintaining its operating organization more or less distinct from the big line but now known merely as the St. Lawrence Division. In 1913, after considerable alteration, her number was changed to 1086. Soon after she was shifted to the Pennsylvania Division, where she has been employed ever since, and where she is now rounding out her twenty-ninth year of active passenger service.

A glance at the record card of the old locomotive is of interest. It appears that her original cost was a mere \$13,000, and that in the last thirteen years of her career she has been the beneficiary of thirteen more or less general overhauls at a cost of some \$14,000 more. This phase of her record cannot be given for her complete career, since repair sheets prior to 1908 are not accessible. The time when the famous old locomotive

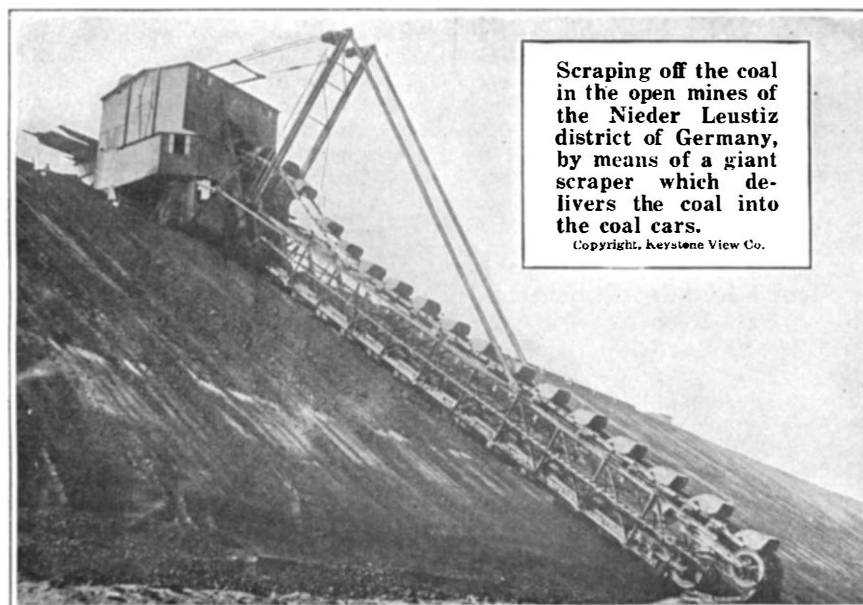


Engine 999 as she appeared in her heyday, when she hauled the Empire State Express at a net running speed of sixty miles per hour

is no longer available for service is remote, but when it arrives, plans already under consideration will insure her an honorable post of retirement and exhibition in the Grand Central Terminal at New York. This will be a fitting terminus to the history of an engine that has contributed so largely to the railroad lore of the United States.

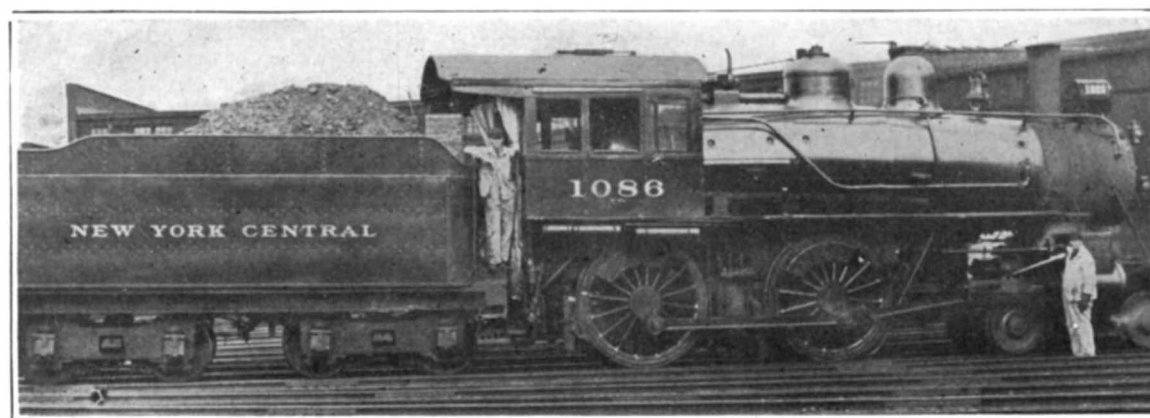
Coal Mining in the Open Mines of Germany

COAL generally calls up a vision of dusky miners working far down in the bowels of the earth, laboring hour after hour in cramped quarters and faced with all sorts of danger. So the accompanying view



of the activities at the open mines of the Nieder Leustitz district of Germany is of more than passing interest, because it shows one phase of coal mining that is utterly different from the accepted version—as different from conventional coal operations as the iron mining of Michigan is distinct in its field.

These barren coal mines of Germany make mining a simple matter. By means of shovels of the type here shown, the coal and admixture of dirt is scraped off the surface and loaded directly into coal cars on top of the embankment. These cars transport the coal and dirt to the plant where the larger coal is sorted out from the similar pieces and the dust, the latter being compressed into briquets.



The 999, made over somewhat and with her number changed, as she appears today in passenger service on the Pennsylvania Division of the New York Central Lines

The Properties and Uses of Manjak

THE term "manjak" is applied to a variety of bitumen or solid hydrocarbon occurring on the Island of Barbados, and in Utah, Cuba, and Trinidad. The deposits on the latter island are found within a distance of three miles of San Fernando, the second largest town on the island, and within three miles of the famous asphalt lake.

In chemical composition, manjak is like asphalt. It is almost pure bitumen. Its melting point is, however, more than 400° Fahrenheit, whereas asphalt melts at 100°. In composition, it consists of 80 to 90 per cent carbon, the balance being chiefly hydrogen, with a small quantity of sulfur. It resembles coal in appearance, is odorless, hard, and brittle. It is found in thin beds between layers of clay.

The island of Trinidad is rich in this mineral resource. Its development has as yet hardly begun, and the exportations already made have been with the view of testing out the material. During 1918, exports to the United States were valued at about \$3,100, and in 1919, up to October 1, they totaled 41 tons, valued at \$1,900. Prior to 1900, manjak was mined on a small scale in Trinidad, but for various reasons, very little was done between 1900 and 1913. In the latter year, mining operations were resumed, and at the present time there are five shafts, one of which has reached a 37-foot bed of manjak at a depth of 400 feet. Operations could be greatly extended if there were a greater demand for the material.

It has not been found profitable to export manjak from Trinidad in the crude state as the price received, namely, \$35 per ton, hardly covers mining expenses. These are increased by the necessity for careful and thorough timbering on account of the clay formation.

Compounds, made by combining manjak with mineral oil, command fair local prices which have enabled mine operations to proceed at a profit. Experimentation is still in progress with different mixtures of manjak and oil for various purposes. The manjak recently sent to the United States was for the purpose of ascertaining whether American oils would be more economical and useful for mixing with the manjak than the Trinidad oils.

It is the plan to erect a plant very soon for the manufacture of manjak paints and compounds. Manjak is rapidly increasing in use, according to the U. S. Bureau of Mines, particularly in connection with the oil industry. It is produced in close proximity to the oil wells in Trinidad. It is boiled with oils at high temperatures and converted into compounds and paints for nearly every purpose where a preservative is needed, for example, on pipe lines, boilers, chimneys, and miscellaneous iron ware, machinery, etc. It is usually applied in the liquid state, hardening into a tough, rubberlike coating. It has low viscosity, and is not affected by ordinary heat. It makes an excellent insulating material and is impervious to both air and water. In hot and damp climates, like that of Trinidad where pipe lines quickly deteriorate, their life has been prolonged for extended periods when painted with this material.

The most important use of manjak, and one wherein it has won a reputation for saving money, is in connection with rotary drilling for oil. A soft compound is used on the joints of the pipes between the casting threads and drill stem threads, and this prevents either water, sand, or grit getting into the threads, thus preserving them from being stripped or worn off. It not only acts with partic-

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